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CARAVAN OF THE MUSEUM'S CONGO EXPEDITION

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MOBALI WOMAN CARRYING WATER

The Congo natives (Bantus) are sharply cut off from the other five African ra- by their language, which, soft, flexible, built on a systematic, philosophical basis, woul- -em to argue degradation from some superior race

The American Museum Journal

VOL. X OCTOBER, 1910 No. 6

IN THE HEART OF AFRICA

THE FIRST PUBLISHED ACCOUNT OF THE MUSEUM'S CONGO EXPEDITION

Photographs by Herbert Lang

TWO members of the Museum staff, Messrs. Herbert Lang and James Chapin, are in the Upper Congo region, that great steaming land of equatorial Africa shrouded in jungle. They have slowly sailed up the Congo River, one of the three largest rivers of the world, and least well-known; they have travelled on foot through dense tropical forests proceeding for hours through swamps until, as described by one of them, they were dripping and picturesque like the mighty jungle trees with innumerable hangings and decorations. They have seen strange places and stranger primitive peoples, of whom it is time that the world obtain complete scientific record in view of the rapid advance that civilization must make in the Congo in the immediate future. The photographs that they have sent tell a small part of the story of their progress into this heart of Africa, giving, however, a realization of the inadequacy of cold gray pictures to make vivid a tropical country, the splendid color, the sounds, the life — and the heat. It was in regard to the last that Mr. Lang wrote the following advice to a friend: "While looking at the pictures get into a Turkish bath. You will appreciate the country better."

The Congo is probably one of the most promising unexplored fields for zoölogical work in the world. There has been every reason to prevent investigation of the region previously. Civilization has ignored the west coast of Africa. The world knows the north, east and south coasts, but mystery has been attached to the whole six thousand miles of the coast on the west where surf continually thunders.

The Congo, inland, is cut off from communication with the north by the desert of Sahara, from the east and the valley of the Nile by high mountain ranges, from the south by trackless jungle and misty swamp. It lies in the heat of the equator, inaccessible and inhospitable, a country of nearly one million square miles, larger than Europe leaving out

EMERGING FROM THE FOREST NEAR AVAKUBI

In Central Africa, more than 8000 miles from New York. A caravan of more than 2 0 people was necessary to transport the expedition's equipment from Stanleyville to Avaku

There are great difficulties in photographic work at the Congo camp, partly because of th e tense heat; developing is done at night

MR. HERBERT LANG LEADER OF THE CONGO EXPEDITION

Mr. Lang, an expert in zoölogical survey and modern taxidermy, has had previous experience in Africa, having gone in from Mombasa on the East Coast in 1906

four centuries after the discovery of the river was it charted, that is, by Stanley in 1877.

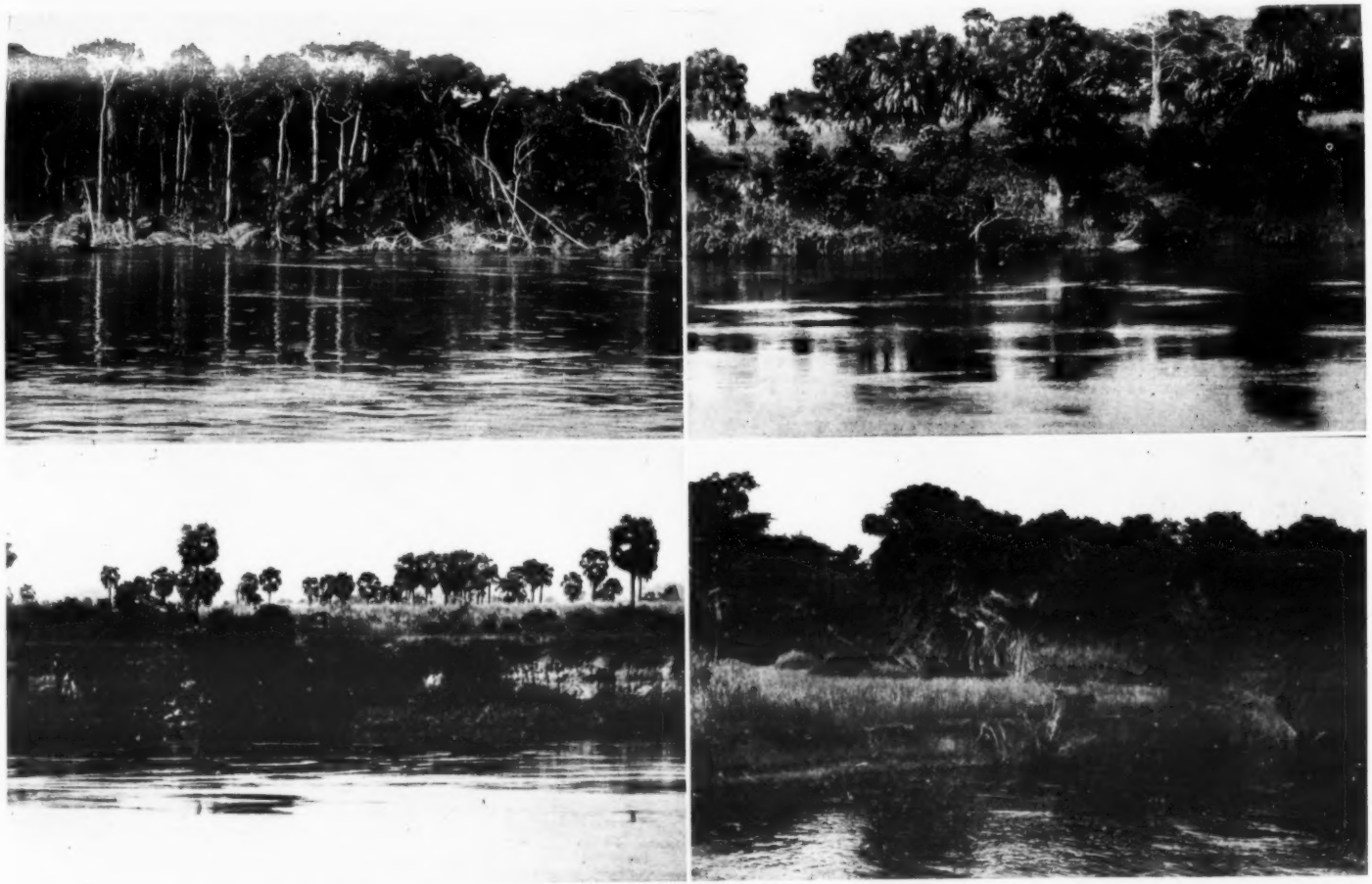
Latterly, conditions have wholly changed. There is now a lure for all nations in ivory, gold and rubber. The Arabs have been driven away and the slave trade abolished. Where formerly there was no way of transferring objects from Spain and Russia. It has been given over to fever and sleeping sickness, to raiding Arabs, and to various negro tribes victims of slavery, and more or less cannibalistic in habit. It has neither sent out invitation nor given cordial greeting to the white man, who up to 1871 had not been more than one hundred and fifty miles from the coast. At that time no one knew whether the head waters of the Congo belonged to the Niger or to the Congo. Not till

MR. JAMES CHAPIN, ASSISTANT

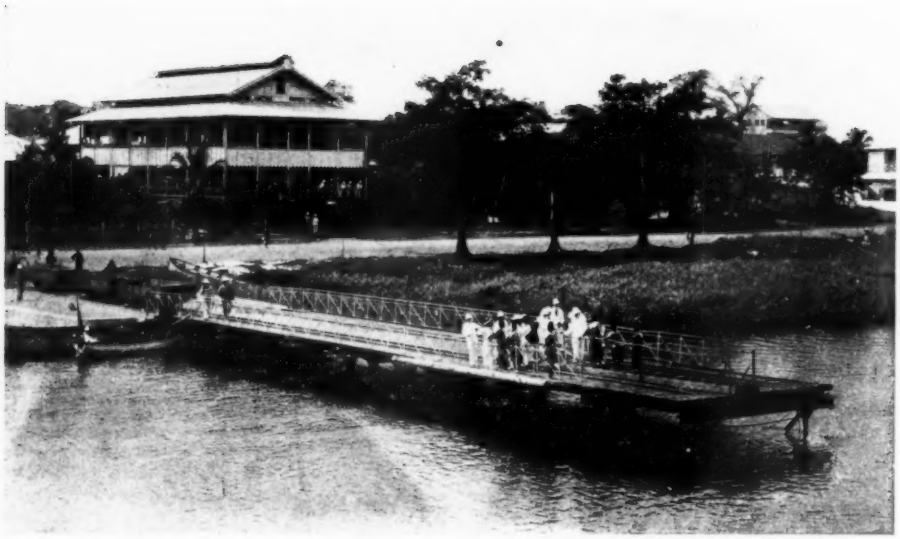
the coast except on the heads of negroes, now ocean steamers discharge cargoes at a railway pier one hundred miles up the river, a railroad continues to Leopoldville, 320 miles from the coast, connecting there with steamers for points still farther inland.

The Congo River between the coast, or more properly between Boma, one hundred miles from the coast, and Leopoldville, is a cataract region, a stretch of two hundred miles through which there is a rise of land from 700 feet above sea level to 2500 feet; or considering it in the other direction, down the river instead of up, there is a drop of 1800 feet through which the vast volume of water passes in a series of plunges from Leopoldville to Boma. It is this impassable cataract region that kept secret for so long the great highway of the Congo. Pass these two hundred miles and the Upper Congo stretches on through 1100 miles of smooth river, making with its tributaries one of the greatest systems of natural canals on the globe.

For many years, the late President Jesup held the hope that an expedition from the American Museum might be sent to the Congo. Even early in 1907, preliminary plans had been discussed with the Honorable Mr. Liebrechts, Secretary General of the Department of the Interior of the Congo, the negotiations being carried on through the Honorable James Gustavus Whiteley of Baltimore, Consulat Général de L'État du Congo, and the Honorable Pierre Mali of New York, Belgian Consul and an intimate personal friend of President Jesup. In May, 1907, the plans were so far advanced that Hermon Carey Bumpus, Director of the Museum, went to Brussels to confer with the Belgian officials. As a result of these negotiations the patronage of King Leopold was obtained for the project, a patronage which he evidenced at once by presenting large collections of ethnological material, a nucleus for the Museum's African halls. With Director Bumpus, the hope for an expedition to the Congo became one of the most cherished among his many plans for the rapid advancement of the institution along lines coördinate with the world's progress. His interest, with that of Mr. Whiteley, accrued also by that of Mr. John B. Trevor of the Executive Committee of the Board of Trustees, finally crystallized in a Congo Expedition Committee appointed late in the fall of 1908 by Henry Fairfield Osborn, President of the Board of Trustees, and consisting of these three men, Mr. Trevor acting as chairman, and of Messrs. Robert W. Goelet, Herbert L. Bridgman and Frank M. Chapman as added



SHORES OF THE LOWER CONGO PHOTOGRAPHED FROM THE STEAMSHIP LEOPOLDVILLE



PIER AT BOMA

The Congo Expedition reached Boma, Capital of the Congo Free State, June 23, 1909

WOODPOST AT BARUMBU

The river boats burn wood, stopping frequently for a supply at "woodposts," usually mere clearings cut out of the jungle

associates. The organization of this committee gave definite form and impetus to the negotiations which finally brought about the sanction of the authorities in Belgium to the Museum's exploration of the Congo, and which so controlled circumstance at home that the project dreamed of became a reality.

The history of the following months, in fact, till May 8, 1909, when Messrs. Lang and Chapin sailed on the "Zeeland" of the Red Star Line for Antwerp, is a fascinating chapter of work preparatory to the launching of a great expedition.

The matter of financing the expedition was taken in hand by a group of the Museum's members and friends, to whom the institution is deeply indebted and to whom the world in the future will be indebted because of the large scientific value of the expedition. They are Messrs. John B. Trevor, Charles Lanier, Cleveland H. Dodge, J. P. Morgan, Jr., William K. Vanderbilt, A. D. Juilliard, Robert W. Goelet and William Rockefeller.

Plans were outlined for the scientific end of the work: to push at once into the central part of Africa so that headquarters might be located eight hundred or more miles from the coast in a region formerly unexplored zoölogically; to make the aim of the expedition a zoölogical survey of the basin of the Congo, collecting heavy game but also directing energies along other lines of investigation, so as to make collections for all departments of the Museum. While awaiting the final arrangements with the Belgian government, coöperation and enthusiasm among those concerned pushed the undertaking to a wonderful success in its preliminary stages, assuring an aim and scope to rank the expedition as perhaps the greatest the Museum ever sent out.

MOBALI WOMAN CARRYING FIREWOOD

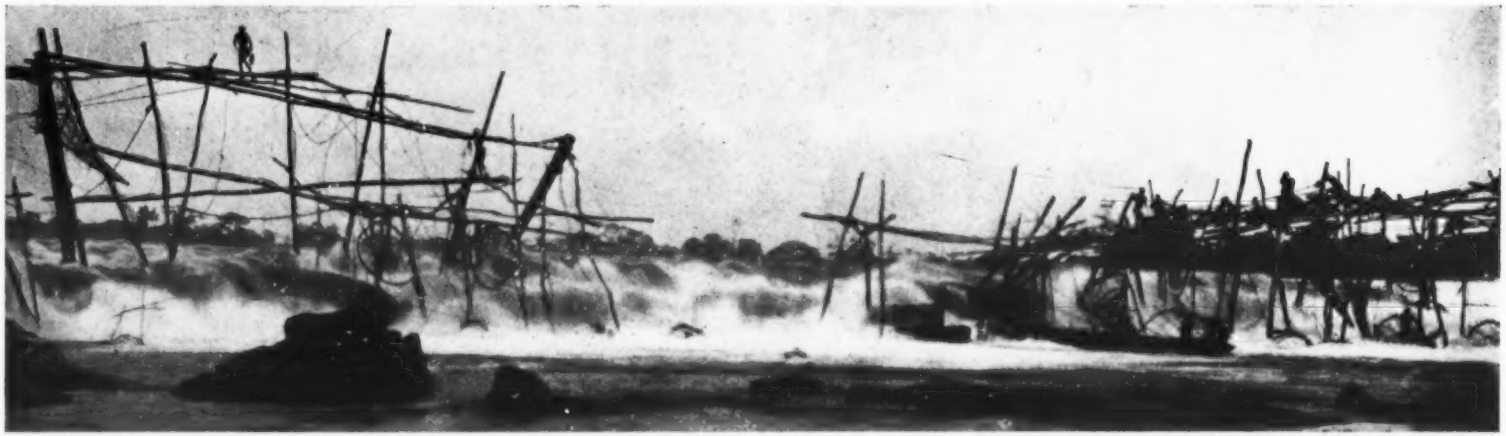
Finally there came a day of good news, April 2, 1909, marked by the receipt of letters from His Excellency Baron Moncheur of the Legation de Belgique at Washington and from the Honorable Mr. Whiteley at Baltimore announcing that there had been secured not only the support and necessary good will of the Belgian Government but also an appropriation of 6800 francs ($1329.23) toward the expense of transportation in the Congo. The compact agreed upon provided that in return the expedition should give to the Tervueren Museum, Belgium, certain suggested zoölogical specimens lacking there. The coöperation is expressed by the following words quoted from the reply of Director Bumpus to Baron Moncheur: "The American Museum of Natural History will consider it a privilege to be permitted to share the scientific results of this expedition to the Congo with the Museé du Congo in Belgium. We are confident that the combined efforts of the Colonial Administration of the Kingdom of Belgium and the American Museum of Natural History will result in the general promotion of Science and thus redound to the benefit of all people."

Practical work could now be pushed rapidly. Passports were obtained from the Secretary of State at Washington, steamship tickets were purchased, permits for freight obtained, money cabled to the Banque du Congo, Belge, Brussels, to be held at the disposal of the expedition. Through the courtesy of Mr. H. L. Bridgman, a member of the Congo Committee, letters of introduction were obtained to persons in Brussels, in particular to His Excellency, the Honorable Mr. Lane Wilson of the United States Embassy; and in each case the new allies proved their personal interest by writing to officials in the Congo. On April 16, at a dinner given by President Osborn to the Congo Committee and other friends of the undertaking, a farewell was extended to the explorers and the last word was said in anticipation of unprecedented success for the work.

A RIVER BOAT ON THE WAY TO STANLEYVILLE

Thus the expedition

In August great flocks of plover-like birds, *Glareola*, sit on the sand bars and stone ledges of the Upper Congo



Arrangements have been made with the natives so that the expedition, on its return, will camp at the famous fisheries at Stanleyville till adequate fish collections can be made

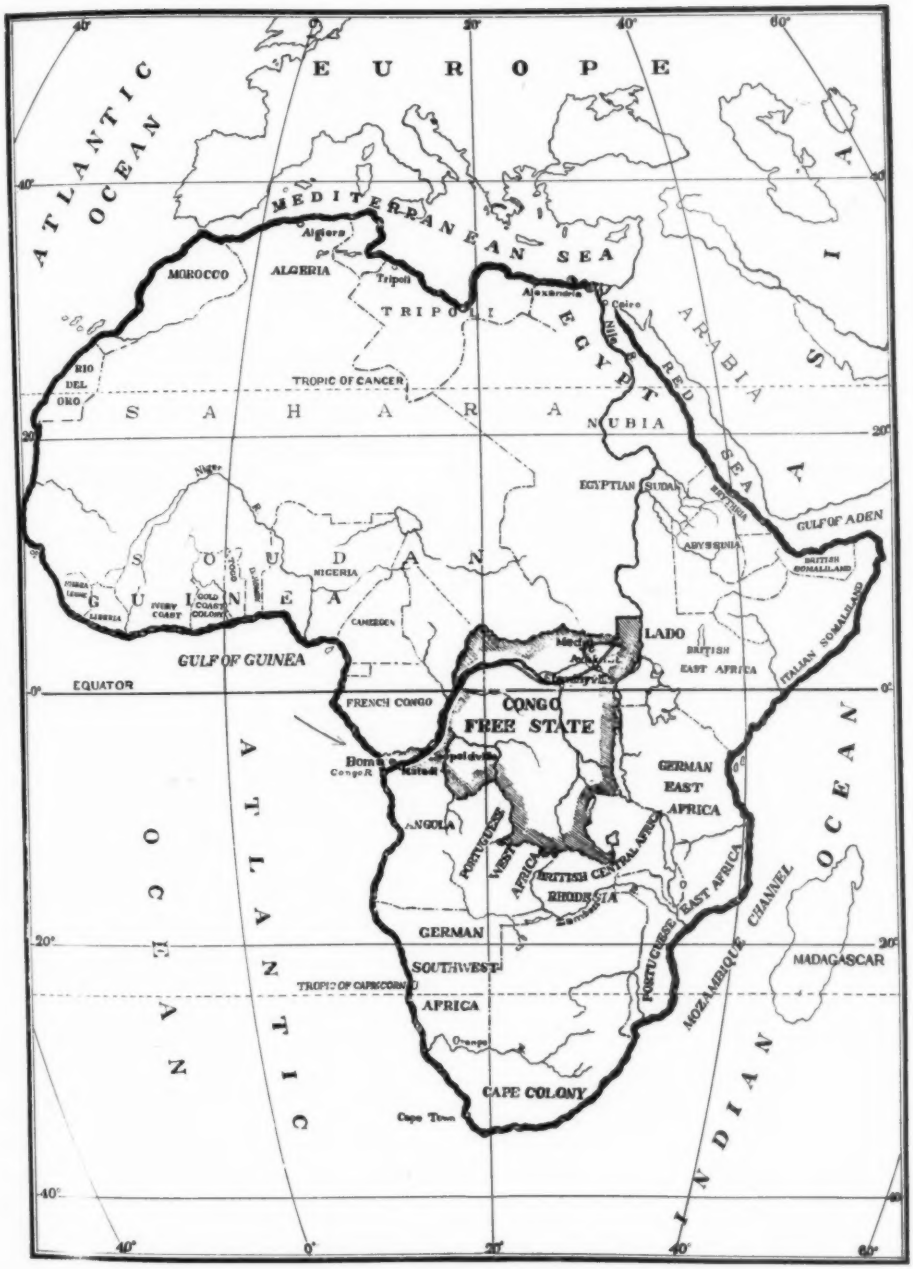
was launched. Messrs. Lang and Chapin reached Antwerp and proceeding to Brussels were cordially received. A letter from the Honorable Mr. Lane Wilson to His Royal Highness Prince Albert de Ligne brought invaluable services in securing concessions for the expedition: all articles for scientific purposes, except rifles, to be duty free; the collecting to extend not only to all ordinary specimens throughout the year, but also to the rare white rhinoceros of the Lado district, the elephant in Ituri, the white gorilla recently found in the Kivu region, and the okapi, that recently discovered relative of the giraffe.

In Brussels and London the equipment was completed, an equipment which throughout was based upon such sound considerations that the expedition is having unusual strength in the field. Special consideration was given to the medicine chest and to the tents. Through the courtesy of the Secretary General, Mr. H. Droogmans, it was most fortunate that the Chief of the Medical Service was met, Dr. Emile Van Campenhout. With ten years experience in the Upper Congo and many years of investigation of Congo diseases, especially of the sleeping sickness, he could advise preëminently well. He inspected the expedition's tents and pronounced them ideal for the region, recommending for night the partly closed rather than the all-round open tent used by the British in tropical work — for daytime use, however, recommending the all-round ventilating type.

Finally in the first week of June the start was made for Africa on the steamship Leopoldville and after twenty days' sail Boma was reached, one hundred miles from the coast, the capital of the Congo Free State for the past twenty-eight years. Here a warm greeting was received from the Honorable Mr. Handley, the American Consul General.

It was well that the expedition had planned to push immediately inland, because of the extravagant prices as well as the dearth of life in the region of Boma and Matadi, the latter a town built on ledges of rock a few miles above Boma. Mr. Lang writes:

> You should see the relative poverty of the fauna around Boma and Matadi. This of course goes hand in hand with the general monotony of the country, nothing but hills, one as barren as the other, though occasionally the grass, usually four or five feet high, is replaced in the valleys by a few bushes. The scarcity of bird life is most striking as one enters the Congo River from the sea. The stream is seven miles wide at its mouth, with low shores, reeds, sedges, papyrus, mangroves and, in some places, cocoanut palms. Farther up, false Borassus [palms] and Baobabs become more abundant; yet there are few birds except of the very common kinds, some terns, swallows and a few vultures.



ITINERARY OF THE CONGO EXPEDITION

Sailing from Brussels on the steamship Leopoldville, the expedition reached Boma June 23, 1909, proceeded from Matadi by rail to Leopoldville, up the Congo by river boat to Stanleyville, from there through the "dense forest" on foot to Avakubi. The latest report, June 30, 1910, came from Medje

The expedition left Matadi by rail reaching Leopoldville July 1, beyond the cataracts and 320 miles from the coast. From there it proceeded by boat to Stanleyville, hoping to find this place suitable for a permanent base of operations. Stanleyville is 720 miles inland, twenty-two days' journey from Leopoldville, although the return trip requires only thirteen or fourteen days owing to the swiftness of the current. Most of the steamers on the Congo are stern-wheelers, of very shallow draught because there are so many sand bars. The expedition, however, did not utilize one of these steamers but took a barge, propelled by a twin screw tug alongside. Wherever the boat stopped to take on firewood, the men went ashore, collected whatever was possible, and on coming back had the advantage of the large deck of the barge for work.

Of the voyage up stream Mr. Lang writes:

The lack of any congregation of large birds must be a surprise to anyone, especially on such a mighty stream interrupted by so many forested or grass-covered islands. One kind of vulture is the most common large bird, but to see more than twenty in a day is unusual. There are some white-headed eagles. In Stanley Pool kites are common, sitting on the sand bars, in the neighborhood of which some solitary pelicans may be seen preening themselves or swimming. On shore there are ibis and geese. A few egrets emerge silently from the bushes on the swampy islands. Water turkeys, mostly single, but sometimes in pairs disappear at once in the water or reeds, or very often take wing to establish another lookout on some branch farther off. To see a few large herons is an occasion, but it may become an exciting event if one discovers, on some distant sand bar, a few marabous. Small shore birds or pigeons may often enliven the edge of shores and sand banks; but the only large aggregations of any bird on the Congo during this season are composed of a species of Glareola, of which several large flocks have been observed. Even the birds that cross the river from time to time show no great variety; flocks of screaming gray parrots are common in the morning and evening, a few hornbills in very elegant swoops, plantain eaters, single or in pairs, more seldom, ducks, heron and ibis. We distinguished five different kinds of kingfishers as they darted out from the branches or hovered over the water.

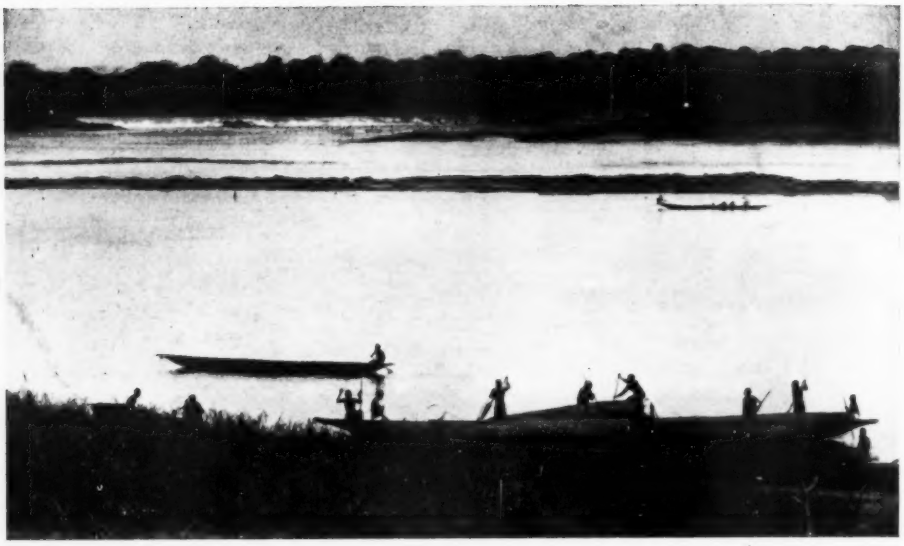
On land it is quite different. Above Kwamouth, not only are larger birds more common, but indeed small birds are fairly abundant, especially weaver birds, sunbirds, bee eaters, wagtails, sandpipers, goatsuckers, swifts, swallows, pigeons, rollers and starlings. We were disappointed in our desire to see mammals from the boat on the journey up stream. There were occasional bands of monkeys sitting in trees near the shore, but no elephants trespassing or bathing in herds, and no buffaloes. In fact, the few places where elephants have been seen six or more years back are pointed out to you, like historic places. Even the hippos seem to resent the bullets that are invariably sent in their direction by the passengers of any passing boat. It is true that we saw some, but it took good looking and a strong field glass. If it happens that a young innocent hippo shows himself full size on a sand bar, the ever hungry negroes on board talk only of something to eat and proceed to shoot him.

BARTERING WITH PASSENGERS ON THE RIVER BOAT

Congo natives are great traders, using for currency such objects as beads and brass rods

VILLAGE ON THE CONGO RIVER

The dots on the palm leaves are nests of the weaver birds. Flat and bare land shows where the river has eaten into and overflowed the shore



THE FALLS OF STANLEYVILLE IN THE DISTANCE

Showing the natives with their dugouts, and also the bar that stretches out into the river. It is at Stanley Falls that the famous native fisheries are located

AT THE ENTRANCE OF THE "DENSE FOREST"

The mightiest primeval woods known to man. A cold gray picture is wholly inadequate to make vivid a tropical country, the splendid color, the sounds, the life — and the heat

Finding after all that Stanleyville was impossible as a base for operations, because of high prices and because too far distant from the most interesting zoölogical regions, decision was made to push on still farther east with a part of the supplies, to Avakubi in the Haut Ituri.

Certain bits of local color from Avakubi are in the following quotations from letters sent to friends and not intended for public reading:

> You laugh about the quinine, but I do not take quite ten grains a day. Every other day I take six grains and have become so accustomed to it that I do not notice any bad effects. Our medicine chest is quite a formidable affair, but seems to be mostly used for treating our black boys and porters, who are always having little illnesses, for which they want "dawa" (medicine).
>
> Just now we are having the pleasure of inhabiting a house, built of bricks laid in mud, as they all are here, and roofed with palm leaves. . . . How you would laugh to see us catching bats in the evening with a butterfly net.

> Avakubi is a great rubber station, about twenty tons a month being received from the natives as taxes. Some elephant tusks are also received from the same source. There is a mission here with two priests who often shoot birds for us. They have added a number of good specimens to our collection. It has taken us an almost incredible time to get out to this place, and will take almost as long to get back. Such an isolated spot can hardly exist anywhere else in the world. A lieutenant who gets his newspapers by way of East Africa, and consequently much more quickly than if they came up the Congo, has lately informed us that Cook claims to have discovered the North Pole. This is about the only news from the rest of the world we have heard. [November 12.]

That the place is isolated was well proved to the friends of the explorers when after August 14, 1909, the months passed by and no word came. Anxiety increased, notwithstanding the knowledge that the expedition had gone far into the Haut Ituri district where it was difficult to get out mail. In late April, however, a sixty-six page report dated November 29, relieved all fear. They were putting in every hour from the first beam of light in the morning till nightfall, and often till midnight when the work required it, and that in a humid atmosphere of about one hundred degrees, but heroically said that all was so fascinating they were not thinking of discomfort. The report, which was rather bulky, had come by parcel post and had been nearly five months on the way.

The comparative isolation of the Congo is well illustrated in the matter of cablegrams. For instance, a cablegram from New York to a point five hundred miles inland in British East Africa will be answered in about eighteen hours, while one from New York to Boma

IVORY CARAVAN

A caravan with 97 tusks from the Haut Ituri. The largest weighs 106 lbs. and is 9 ft. long. Trade in the Congo is now in the hands of several nationalities

"WIRELESS" STATION AT STANLEYVILLE

By an intricate system of beating the tom-tom — a log hollowed out through a narrow slit — news is "telegraphed" at night. The sounds repeated over and over carry six or seven miles

or Matadi only one hundred miles from the coast will not even reach its destination for from ten to fifteen days. In fact, thedel ay is said to be sometimes so great that a letter may be received before the cablegram.

The report of November 29 shows remarkable industry. It reveals work astonishing in amount and careful and systematic to a degree. Mr. Lang is evidently living up to his reputation for speed and skill in the work of zoölogical survey and expert taxidermy; and not only this, but also such system is being used in labelling the material that the collection will have indubitable scientific value. It was the wish of the Museum that all specimens, large and small, should be individually tagged so that if at any time they had to be abandoned but did ultimately reach the Museum, there would be more chance of their scientific value having remained unimpaired. It scarcely seems possi-

"TELEGRAPH" OPERATOR

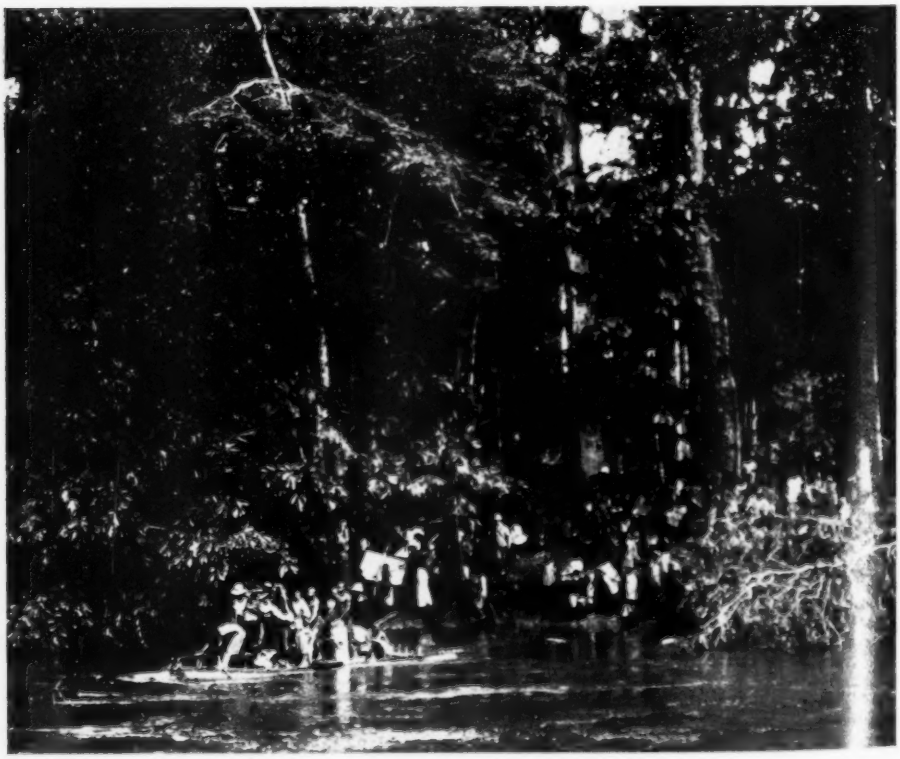
Sounds produced by beating at different points on the tom-tom are combined into a syllabic alphabet, so that any message, however complicated, can be sent

NATIVES OF STANLEYVILLE PLAYING A GAME

They spin fruit stones like tops. The trick is spin two on the banana leaf so that one will bounce the other off

A RESTHOUSE AT BAFWASIKULE

Erected for the agents of the colony. The courtesy of these resthouses has everywhere been granted to the expedition



MUSEUM CARAVAN CROSSING A RIVER

The raft is attached to lianas stretched across the stream

ble that two men in the short space of two months after reaching their base of operations should have been able to prepare such a list of specimens, 291 mammals and 472 birds, besides more than 2000 specimens of the smaller fauna. A later report sent out January 5, little more than three months after reaching Avakubi, shows a record of 510 mammals and 762 birds, with more than 4000 of the smaller fauna, and this collection covered by 400 pages of descriptive matter.

That so much has been done is due not only to speed and skill, but also to the foresight of the leaders in planning and to that force of personality which can get enthusiastic work from subordinates. Three assistants (Loangos, a tribe from the French Congo, known as very intelligent) were hired before leaving Leopoldville. These fellows were taught during the voyage up the river. Afterward, just before leaving Stanleyville, the last place where natives can be engaged by contract, fifteen assistants were hired — for a monthly payment of three dollars in addition to food.

> We have done our utmost [writes Mr. Lang] in training these natives and look forward with great pleasure to the results. Six of them can prepare small mammals, four can prepare birds, several of them can do the work on larger mammals, though all of them can take active part in it. Besides, two are successful hunters, and all know how to set traps for small mammals and to catch reptiles and batrachians. Several are very keen in catching invertebrates, and one is remarkable for finding different species of ants. Others are fishermen; they know how to weave native fish traps and they handle canoes with skill. As a whole they are a remarkable lot of natives, and I sincerely hope that the results will show what can be achieved by native assistance.

In addition to these trained assistants the expedition has forty porters for the work of ordinary occasions. The porters are not hired for a long period but are paid and discharged at the end of every trip, fresh ones being engaged in each new locality through the assistance of government officials. The porters of the Upper Congo cannot carry as heavy loads as those of British East Africa; fifty-five pounds (English) is taken as a maximum load. This results not only from their inferior physical constitution, for there are many strong and well-built porters, but it is, of course, more weakening, even for natives, to carry loads in the hot moist atmosphere of the forest than on the generally healthy plains of British East Africa. A very large caravan was necessary for the travel through the dense forest from Stanleyville to Avakubi; one hundred and sixty porters were hired at Stanleyville and to get along

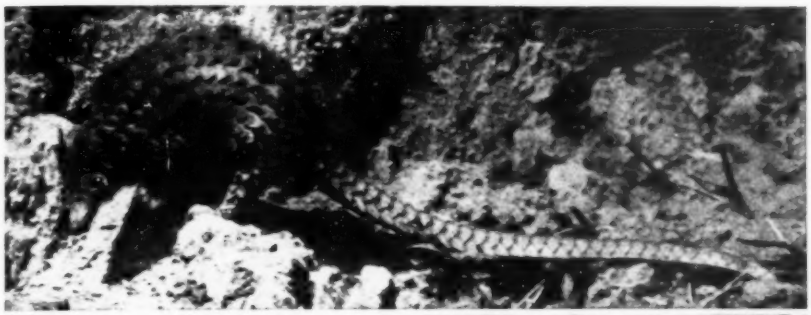
quickly and safely twenty more were engaged from village to village. It is interesting to know that after twenty-two days' march under all the difficulties of making way through a wet tropical forest, this large caravan was brought to a safe arrival at Avakubi, having lost neither man nor load and with everything of the equipment in perfect condition.

To read the following quoted from Stanley's description of the Congo jungle brings a fuller appreciation of this march:

> Lean but your hand on a tree, measure but your length on the ground, seat yourself on a fallen branch, and you will then understand what venom and activity breathe around you. Open your notebook, the page attracts a dozen butterflies, a honey-bee hovers over your hand; other forms of bees dash for your eyes; a wasp buzzes in your ear, a huge hornet menaces your face, an army of ants come marching to your feet. Some are already crawling up, and will presently be digging their scissor-like mandibles into your neck .... Imagine the whole of France and the Iberian peninsula closely packed with trees whose crowns of foliage interlace and prevent any view of sky and sun.... Then from tree to tree run cables from two inches to fifteen inches in diameter, up and down in loops and festoons and W's and badly-formed M's; fold them round the trees in great tight coils, until they have run up the entire height, like endless anacondas; let them flower and leaf luxuriantly, and mix up above with the foliage of the trees to hide the sun, then from the highest branches let fall the ends of the cables reaching near to the ground by hundreds....Work others through and through these as confusedly as possible ....on every horizontal branch plant cabbage-like lichens of the largest kind, and broad spear-leaved plants....and orchids and ... a drapery of delicate ferns. Now cover tree, branch, twig, and creeper with a thick moss like green fur....To complete the mental picture of this ruthle-

CHIEF OF A RENOWNED CANNIBAL TRIBE

The cap of leopard skin and red parrot feathers gives him wisdom; the chain of leopard canines confers the leopard's stealth and cunning. Instead of the ivory disk usually gracing the upper lip of the Congo native, he wears a polished leopard incisor



Congo anteater or Pangolin

forest, the ground should be strewn thickly with half formed humus of rotting twigs, leaves, branches; every few yards there should be a prostrate giant .... half veiled with masses of vines .... and every mile or so there should be muddy streams, stagnant creeks, and shallow pools, green with duckweed, leaves of lotus and lilies, and a greasy green scum....

Striped Squirrel of the Congo

Congo Horned Viper

In addition to the government assistance in the matter of porters, which has been due largely to the personal influence of Mr. Jules Renkin, Minister of Colonies, courtesies have been extended to the expedition in two other directions. It has been granted storage free of charge in every magazine of the Province Orientale, and has been allowed to get goods from the government storehouses. This latter privilege is of unusual importance as no money of any kind is used among the natives of the Upper Congo and the various kinds of articles, brass rods and accordeons, for instance, prized and accepted in trade among these tribes are so

REVISING THE LOADS, TWO HOURS FROM AVAKUBI

The 200 porters and native assistants of the Congo Expedition after marching through the dense forest for 22 days

CONGO EXPEDITION ENTERING AVAKUBI STATION

Congo natives cannot walk long distances, and admire greatly the white man of strength and endurance

unusual in a white man's eyes that no adequate preparation could be made.

When the report of January 5 was sent, the active work on heavy game had not commenced. The expedition was on the point of engaging experienced native hunters and the very keenest pygmies to be found. It was in the district of large game where the trumpeting of elephants could be heard from the camp, and elephants' trails — deep round footprints "as if someone for amusement had gone about sinking a bucket into the mud and pulling it out again" — were common along the river and in the banana plantations. For the most part heavy game in Central Africa is protected by law and is relatively abundant, not near extinction as in South Africa. The square-mouthed or so-called white rhinoceros, however, is not common anywhere in Africa. It is practically extinct in South Africa, is rare in the narrow strip of country west of the Nile — the Lado of Central Africa — and is wholly unknown in all other parts of the continent. The square-mouthed rhinoceros is on the average larger than the common African rhinoceros, has a double hump in the region of the neck and a head that differs wholly in shape from that of the common form, one striking point of difference being a square upper lip instead of a pointed overhanging one.

MAMBUTI PYGMY, AVAKUBI

Congo pygmies, having the height of ten-year-old children, are shy, vindictive when angered, keen in hunting. Many photographs and 24 measurements of this pygmy have been taken, besides a plaster cast of his face

Also, the expedition was in the land of the okapi, with the hope of getting specimens for a group in the Museum. Less than ten years ago the world was stirred by the discovery of a new animal in the northern part of the Congo forest, *okapi*, the natives called it. Stanley had gained from the dwarfs some hint of it. He thought it related to the horse, in spite of the anomaly of a grass-eating animal living in forests. When actually seen, the okapi was found very wonderful: a shy animal, standing as high as a stag, and feeding on the leaves and twigs of trees,

its sleek, glossy coat even brown above while zebra-like on the legs and posterior part of the body. Its foot has two hoofs but no vestige of the two small false hoofs characteristic of the deer. In fact, the okapi proves itself closely allied to a fossil animal, *Helladotherium*, of Greece and Asia Minor, its nearest living relative being the giraffe.

The hunting trips for large game will facilitate the work along anthropological lines since pygmies will be a part of the company. Besides, villages will be visited, having two or three hundred pygmies attached to them. Some successful casts have already been made of the faces of three pygmies, but dwarfs are so shy that they are reluctant to submit to the procedure. They were won over by having their hands cast first. After they had seen how simple a matter it is, they were induced to allow the plaster to be put on their faces.

A letter sent to friends in early January tells of the personal welfare and good cheer of the explorers:

> On Christmas we dined especially well and on New Year's day opened a canned plum pudding (!) that had been given to us in Stanleyville. Good food is not at all scarce here. Yesterday we looked over our stock and found we had seven live chickens, ten pineapples, three large bunches of bananas and various fresh vegetables and fruits. Sweet potatoes, whiter and not so tasty as those at home, grow like weeds on all sides. In fact, we scarcely need to draw upon our European provisions at all except for butter and sugar.
>
> From the first of December till two days after Christmas we stayed at N'Gayu, three days to the north of Avakubi, collecting mammals and other specimens which have been sent back to Avakubi. Our Christmas present was an old male chimpanzee captured on Christmas Eve.

A final word just received from the expedition, started June 30 from the Congo camp at Medje, north of Avakubi. With the introductory words, "There is only good news to be reported, all is well," there follows a triumphant record: 1200 mammals and 1500 birds are in the collections; a unique ethnological collection of 700 numbers has been gained from the Mangbetu; best of all, the okapi group is assured, not only in the possession of male and female specimens and young, but also, in that materials from the animal's haunt have been preserved and crated ready to ship, so that there promises to be reproduced in the near future in the American Museum of Natural History, New York, a small part of the mighty Congo forest with its strange life.

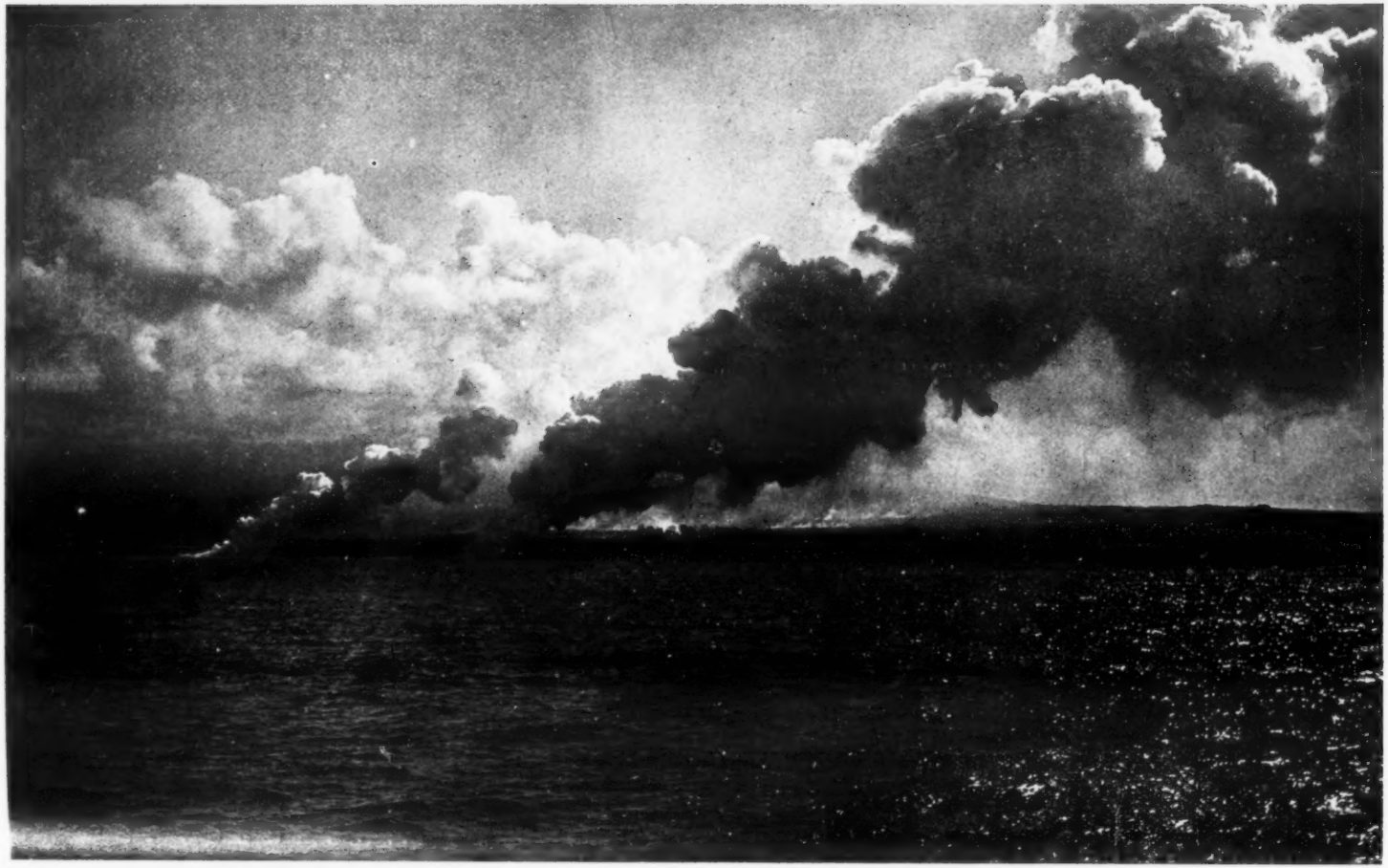
MARY CYNTHIA DICKERSON

TWO ACTIVE VOLCANOES OF THE SOUTH SEAS

WE were camped at the base of the volcano Savaii of the Samoan Islands and had climbed from our camp to the summit over the broken lava fields to see the fire of the volcano at night. Standing upon the extreme edge of the crater and looking down, the immense lake of lava four hundred feet below glowed almost as a continuous incandescent mass. Its light was reflected upon the clouds above, making a beacon that we had often seen from a distance of forty miles and which was said to have been visible at a distance of seventy miles during the period of the volcano's greatest activity about two years previous. Looking seaward, rosy vapors outlined the course of the lava down to the shore of the island where the fire of final lava cascades gave color to two huge clouds of steam. The fires illumined the scene so as to give light to guide a way over the broken lava, which is at best a precarious ground, and again and again through the night we climbed from our camp at the base of the cone to look down upon the fascinating but awful marvel.

Even when we saw it in the daytime, it was hard to realize the scene actual and not an imaginary panorama of Dantesque infernal regions. The yawning cavity of the crater extended a full half mile in length, and its width was more than four hundred yards. Almost perpendicular and sometimes undercut, the crater walls dropped hundreds of feet to the lake of molten lava, which was in such violent commotion that it seemed to be liquid flame rather than a mass of fused and fiery rock. At certain places it boiled with unusual activity, sending huge jets and fountains high into the air. Its waves moved hither and thither at different times, but now and then they would surge heavily and dash against the wall where the lava made its final way to the ocean. And always from this surface, thin steam-like vapor charged with acid gases swirled upward in the draught caused by the strongly-blowing trade winds, making it unpleasant to look over the edge even from the windward side.

We had begun the ascent of the volcano early in the afternoon in order to reach the crater before dusk. Proceeding through the undestroyed woods of a neighboring valley we entered upon the lava field at a point some miles from the coast, thus obviating the necessity of traversing its whole extent from sea to crater. Our natives, bearing food and water, now



SAVAII VIEWED FROM THE SEA

Volcano, and portion of the north coast of the island. The clouds of steam are caused by molten lava pouring into the ocean

WESTERN LIMIT OF THE LAVA FIELD ALONG THE SHORE

Continually more territory has been devastated as wave after wave of fluid lava has swept downward from the crater of Savaii

THE CONE OF SAVAII

The cone is 400 ft. from base to crest. The margin of the crater shows above at the left

tied the husks of cocoanuts to their naked feet for protection in walking over the broken lava, and after a final pause for rest, we left the shade and tempered heat of the tropical forest for the open glare of the volcano's slope. Viewed from afar, this slope seems even and smooth, but in reality it is like a tempestuous ocean suddenly arrested in its movements and turned into stone. Here and there wide sheets of lava with corrugated rippling surfaces formed still rivers between massive banks of cinders through which their molten substance had earlier ploughed its way; larger and smaller tables of crust, like broken floes of the Arctic Ocean, were tilted up and piled in strange heaps. And so vitreous was the material of this sea of black broken rock that the light was reflected from millions of crystal surfaces and facets as from so many fragments of ice or glass.

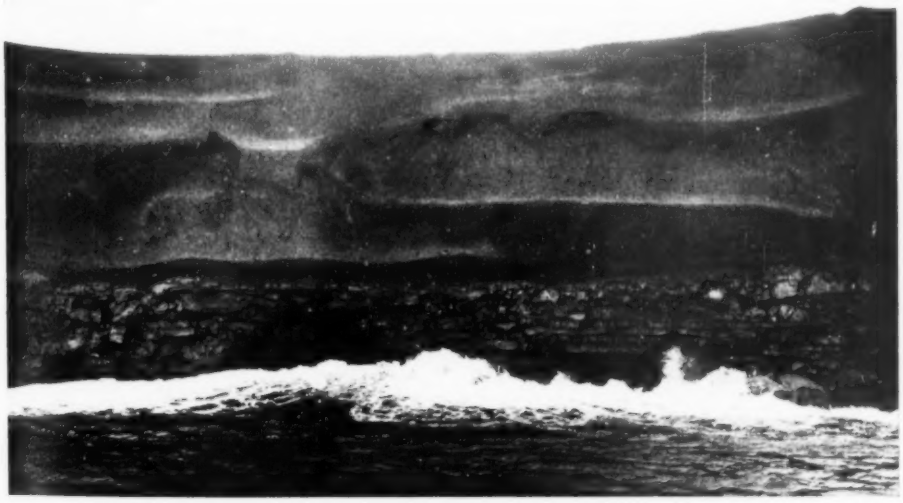
Progress over this field was necessarily slow, but by following the general trend of the less broken lava streams, we gradually worked upward and toward the main axis of the whole lava mass, indicated by vents which gave egress to steam and gases discharged by fluid lava running through tunnels beneath the surface.

The great crater we found a perfectly typical cone of cinders and lava, with a height from base to summit of four hundred feet as measured by the aneroid barometer. On three sides it is composed mainly of ashes and pumice, but toward the sea its surface displays smoother areas of rock where the lava formerly welled over the edge before the tunnels were formed by which the discharge now takes place. Large bombs, rounded masses of lava hurled from the crater during some explosive eruption, occur on the slopes, sometimes covered as by a sheet of tar with a later-extruded layer of lava.

It was in the course of my fourth journey among the islands of the Pacific that I made the ascent of this remarkably active volcano formed about five years ago on the island of Savaii, the largest member of the Samoan group. It happened that my investigations of the distribution of the land snails of Polynesia demanded for comparative data a thorough exploration of volcanic islands of great age, islands that for many centuries have been sculptured by the elements till they present alternating ridges and valleys radiating from their high central peaks. Tahiti is perhaps the most beautiful example of such an island. In many cases the several islands in the Pacific groups are of different geological ages, and consequently display different degrees of weathering. They thus form a series of stages to show how ancient rugged islands like Tahiti and Moorea may have been derived from the newly formed volcanic mountains like those of the Hawaiian and other groups which possess relatively even sides with lava fields unfurrowed by erosion.

CRATER MARGIN, SAVAII, FROM THE SEAWARD SIDE

Savaii holds supreme rank among volcanoes of to-day for rapidity of development



SEA WALL NEAR THE CASCADES OF MOLTEN LAVA

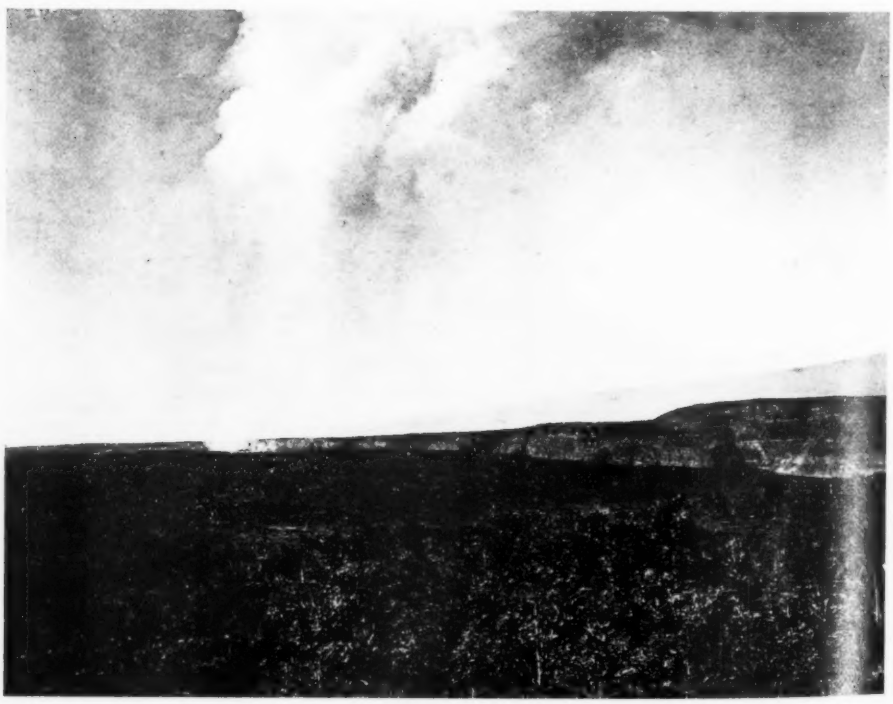
Cinders and lava, layer upon layer, between volcanic field and sea

RUINS OF STONE HOUSES

Trees were not consumed because of rapid cooling of the lava

MAUNA LOA, HAWAII, VIEWED FROM THE SEA

The even slopes, bearing secondary cones, rise slowly and grandly to a high summit



"HALEMAUMAU", HOUSE OF PERPETUAL FIRE

Floor of the main crater basin of Kilauea, the jet of vapor marking the fire-pit; in-candescent lava. Kilauea has been active continually for more than a hundred years

It is true that I was interested in these Pacific islands also for reasons less closely connected with my work. For instance, the various islands give evidences of great changes in the level of the ocean bed and also explain the rôle played by corals in the construction of many types of islands. With few exceptions the islands occur in groups or chains suggesting the conclusion that they are the peaks of a range of mountains formerly connected by lowlands but now separated as the result of a subsidence of the ocean's floor. Every one is familiar with the theory that a coral atoll, consisting of a living reef bearing a more or less extensive series of coral islets, is built upon such a volcanic peak, which, according to Darwin and Dana, has been withdrawn below the water's level and overgrown by coral as it slowly subsided. It may be, as Agassiz contends, that a coral atoll is built upon a submarine volcanic mountain upheaved from the ocean's floor; but in either case the relation between coral reefs and volcanic peaks is one that possesses a real importance for the zoölogist.

The two volcanoes of Savaii and Kilauea occur in island groups that are in every way typical of the so-called "high" islands of the Pacific Ocean. The Samoan Islands, containing Savaii, lie almost on a straight line running nearly east and west. Upon examination they prove to be of various ages, for the westernmost, Savaii, bears the volcano that is active and has other indications that it is more recent in origin than its neighbor, Upolu; this island, in its turn, is younger than the more rugged Tutuila and Manua to the east. The Hawaiian Islands, containing Kilauea, also range with some regularity along a line, which in this case runs west-northwest and east-southeast; but one very interesting difference consists in the fact that the newest island, Hawaii, lies at the eastern end of the group, while the relative geological ages of the other islands correspond with their serial geographical order westward to Kauai, the oldest and most sharply sculptured member of the group. In all other essential respects, the Samoan and Hawaiian Islands are closely similar.

The new volcano on the island of Savaii is assuredly very impressive. Its total mass is great, but this feature is not so striking as its remarkably rapid development in the short period of five years; this development and the continual flow of fiery lava from its vast crater entitle it to supreme place in the array of volcanoes now in activity. It lies about eleven miles back from the coast nearly opposite the middle of the north shore of Savaii, which is roughly rhomboidal in outline and forty miles long. Approaching this part of the island by day, the most striking features of the panorama are the two vast clouds of steam that rise from the places where molten lava pours in cascades into the ocean. Upon the glistening black slopes beyond, jets of vapor mark the vents in the roofs of the tunnels through

which the fluid lava runs upon its seaward journey from the crater; and from the crater itself, two thousand feet above sea level, rises a similar fountain of thin steam that quickly merges with the dense clouds above.

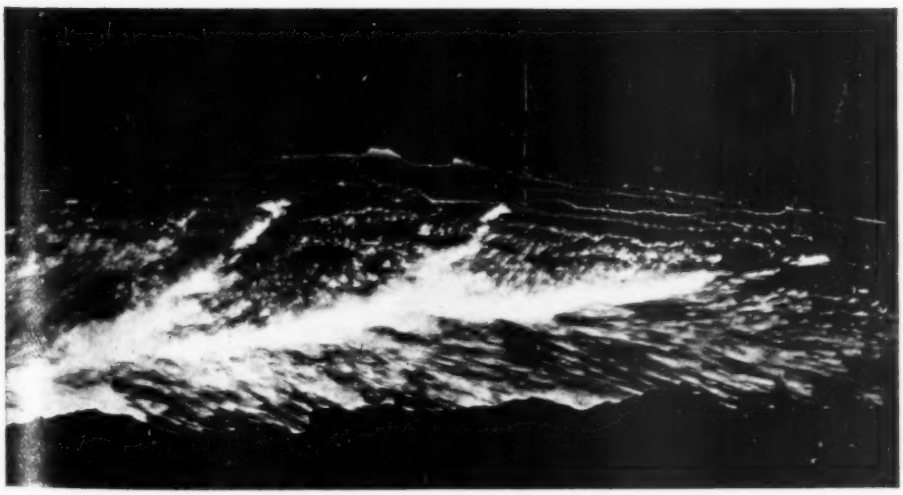
When one looks upon the enormous mass of this new mountain, it seems impossible that five years could be sufficient for its formation, yet this is actually the case. The first crater appeared in August, 1905, upon the floor of a beautiful green valley. As cinders and lava were sent out, they gradually built up a larger dome and spread out to form the first strata of the great volcanic field. The flow followed the valley to the ocean, but as wave after wave of fluid lava or steam-charged ash swept downward, more and more territory was devastated, while the lava, already cooled to form ridges and hillocks, diverted the later lava rivers into irregular and wider-spreading channels. Reaching the ocean, the molten rock poured into the depths of the sea over the coral reef, building ever outward, at the same time that it followed the reef and shore so as to spread over a section of the island represented by a five-mile arc of shore. Naturally the seaward wall of the whole lava field is highest near its midline where it measures eighty or ninety feet. This wall displays a regular series of strata of prismatic blocks or tables, formed by the cooling of successive sheets of flowing lava. These strata sometimes lie between masses of cinders, showing how the eruptive output varied in character during succeeding weeks and months. Toward either side, the whole field gradually thins out, and at its western edge ends in a series of rough rocky billows, seared and broken by their contraction in cooling. Yet their materials reached this point as red-hot fluid lava, having journeyed a route that must have been nearly fifteen miles in length.

As the molten lava first swept down the valley and along the strand, we can see that its destructive affects were rapid and complete. It was only where there were walls of coral limestone, like those of the churches and traders' warehouses that anything could withstand the flood of rock; the wooden huts of the seaside villages were entirely consumed. Yet so quickly did the surface of the plastic mass become cool, that the cocoanut and other trees, felled by the burning through of their bases, were rarely consumed.

Turning to the volcano Kilauea of the Hawaiian Islands, we find it in many respects quite different from Savaii of the Samoan group. It is an accessory outlet upon the side of the giant volcanic mountain of Mauna Loa, whose main crater at the summit, more than thirteen thousand feet above the sea, is active only at very long intervals. There is a journey of two hundred miles from Honolulu to the island of Hawaii on which Mauna Loa occurs; viewed from the ocean on approach, the even slopes of the mountain rise slowly and grandly to the high summit, bearing numerous secondary or "parasitic" cones which have been formed by sporadic local eruptions.

THE "LAKE OF FIRE" OF KILAUEA

Jets of molten lava are thrown up along lines of greatest activity



THE "LAKE OF FIRE" OF KILAUEA AT NIGHT

The photographic film was exposed four seconds

The first view of Kilauea itself is somewhat disappointing to one who has recently witnessed the grandeur of the eruption at Savaii, but closer acquaintance reveals many features of great interest. Kilauea lies about four thousand feet above the level of the sea, and is about twenty miles back from the coast. In general structure it is a wide shallow basin over three miles in diameter, depressed below the general level of the slopes of Mauna Loa. At quite a little distance from the geometric center of the lava field which forms the floor of this basin is the active fire-pit, marked during the day, as at Savaii, by a cloud of vapor, and at night by a marvelous pillar of fire.

The well-beaten trail to this center of activity leads down along the terraced wall of one side to the almost level floor of the main basin. In the strongest contrast to Savaii, Kilauea's lava field is remarkably even; indeed the best areas of the former are far more broken than the most irregular parts of the latter. The surface undulates more or less, it is true, while here and there broken masses form hillocks and ridges, but the active vent has given forth the molten lava with comparatively little disturbance. Since the middle of the nineteenth century enough rock has poured out into this wide basin to reduce the height of its vertical walls from more than eight hundred feet to about four hundred.

In December last, Kilauea was unusually active after a period of relative quiet. The fire pit is nearly circular in outline and its walls fall in two terraces to the small pool of molten lava, about two hundred feet below the natural level of the whole basin. Its general structure has varied more or less in past decades, as well as its degree of violence, but it has been a permanent center of eruptive activity for more than a hundred years, well deserving the native name of "Halemaumau," the House of Perpetual Fire.

Here as at Savaii the surface of the pool is in constant commotion, but the areas of incandescence are much restricted and run in parallel or forking lines. Cakes of congealed lava float between these lines, and when in their movements they reach the neighboring areas of greater activity, they are redissolved and their fragments are thrown into the air together with jets of more fluid lava. Photographs taken at night exhibit with great distinctness the primary and minor areas of greater activity that form a network upon the surface of the pool.

HENRY E. CRAMPTON

A NEW SWORDFISH MODEL

GREAT interest prevailed in the Department of Preparation one hot Saturday forenoon in late July when a swordfish, a very perfect 130-pound representative of its race, was brought there as a gift from one of the Museum's members, Mr. George McKesson Brown. The fish was in fine condition for casting; it had been put, as soon as captured, into a specially constructed zinc-lined tank filled with ice, then after a hurried sail to New York, had been removed from the yacht's deck to the Museum, still in its ice-filled tank.

The staff of the Department dropped other work and under the direction of Dr. Louis Hussakof and the donor set out to pose the fish, ready for the manipulation of clay and plaster about it. The body was made to curve slightly as if in motion. The tail fin was placed stiffly in the position in which it cuts the water as it moves rigidly from side to side. This rigid widely-forked tail fin, contrasting with the curving flexible tail fin of a shark, announces the identity of the swordfish to the fisherman watching with harpoon ready at the prow of his boat. The "sword" was posed straight out in front, more than three feet in length, slender and rapier-like, a weapon made by consolidation of the upper jaw bones. It is this sharp-edged instrument that is said to prove so deadly to a school of fish. The swordfish rises fully into air above the prey, turns on its side and drops — a long, slender form glistening in air momentarily. Then the many small fish sharply cut in two by the descending weapon are followed and picked up as they settle to the bottom. The men in the taxidermy shop continued to work throughout the day but as a result, at night, there lay beside the fish a two-piece mold, perfect imprints of the two sides of the fish.

The adaptation of a swordfish to endure high pressure is said to be remarkable. A diver who can stand a greater pressure than sixty or seventy feet is difficult to find, to stand one hundred feet is most unusual, although there are extreme cases in which the record is higher than this. It is said that the usual sub-marine boat can endure little more than one hundred and fifty feet depth, its standard power being to maintain a depth of seventy-five feet; yet a swordfish, according to Mr. Brown, will reach a depth of twelve hundred feet. When harpooned and given freedom, fastened only to a floating keg, it may carry a two hundred fathom line straight down till taut. If the line is too short to reach the bottom, the keg will be dragged under, staves and hoops will rise to the surface, resulting in the loss of the fish to the pursuing boat.

This specimen, the cast of which will be put on exhibition soon, measured nine feet in length and was caught about forty-five miles off Block Island, a region the fish reaches in July, appearing off No Man's Land a little later, and as far north as Bar Harbor in August. The swordfish is the only species of its kind. It belongs to the mackerel type with body greatly narrowed just in front of the tail fin, the rapid motion of the slender posterior end of the body and of the tail fin sending the fish at high velocity through open seas. It is reported to be a creature radiantly beautiful in sun-lighted water, as with grace of form and motion, clothed in the iridescent colors of feldspar, it now shimmers in contrast with the hues of the sea, now blends with them. The swordfish has strength even great enough to penetrate ships and, as is proved by many authentic reports, has often had the inclination to use this strength. The species, although widely distributed through the seas of the world, has recently become more rare. Fishermen fear that in a very short period of years it will be extinct along the Atlantic coast.

A NOTE FROM THE FORESTRY HALL

THE Honorable Mr. Karl Petraschek of Vienna, who is in America to study forestry conditions, stopped in New York this summer on his way to Washington and the West and spent several days studying the collection of North American trees in the Museum's Forestry Hall. Mr. Petraschek has been Chief Forester of Bosnia and Herzegovina for more than twenty years. In addition to this practical work in Austria, which includes the famous reclamation of the Karst, a 600,000-acre tract of barrens, he has studied the forests of other countries also, namely, Germany, France with Algeria and Tunis, Norway, Sweden, Denmark, Roumania and Servia, this last country through having been called there as expert for the reorganization of Servia's system of forest management. Mr. Petraschek's pleasure in the Jesup Collection was great; he declared it to be, quoting his words, "a sample for the world, in its complete display of the wood itself, in arrangement and 'groupment,' as made now for a great part of the hall, in the models of leaves, flowers and fruits, which are so like nature that they give a better idea than a good picture, and also in the labels, especially those with small maps, indicating graphically the dispersal." America can learn much from Europe in all forestry matters. As proof stand the four months of study spent last winter in Germany by forty-five Americans, sons of lumbermen and forest owners and students of the Biltmore Forest School. It is therefore gratifying to realize that

in the opinion of expert European authority, President Jesup's inception of the American Museum Wood Collection with its complete representation of distribution maps and the recent work which has added flower and fruit models and arranged the trees in natural groups, have produced an exhibition unsurpassed in excellence.

THE ANNUAL SCOURGE OF FLIES AND MOSQUITOES

Exhibition Hall labels must necessarily be brief. For those who are especially interested in some given subject, much must be left for explanation by other means. These notes on household insects have been prepared to supplement the exhibits which are being arranged in the Hall of Local Insects, since inquiries pertinent to the subject come both from members of the Museum and others almost daily by letter, telephone and word of mouth.

THE old method of prolonging life through the quest for an elixir of life has fortunately been replaced by the modern method of gaining control of the preventable causes of premature death. Of these causes to-day nothing is to be compared in disastrous results with the infectious or germ disease. One of the greatest discoveries made in the work of getting control of germ diseases has been the relation between their dissemination and common insects, insects so accepted by the world as necessary evils that there has been great difficulty for public opinion to grasp the far-reaching force of the discoveries and the tragic meaning of past years of ignorance. That where there are no mosquitoes, there will be no malaria and no yellow fever, is a fact now proved beyond dispute. That Africa has so often been the "white man's grave" has not been the fault of Africa so much as of the white man's lack of knowledge of the relations between the sleeping sickness and other fevers prevalent there and insects, especially of flies and mosquitoes.

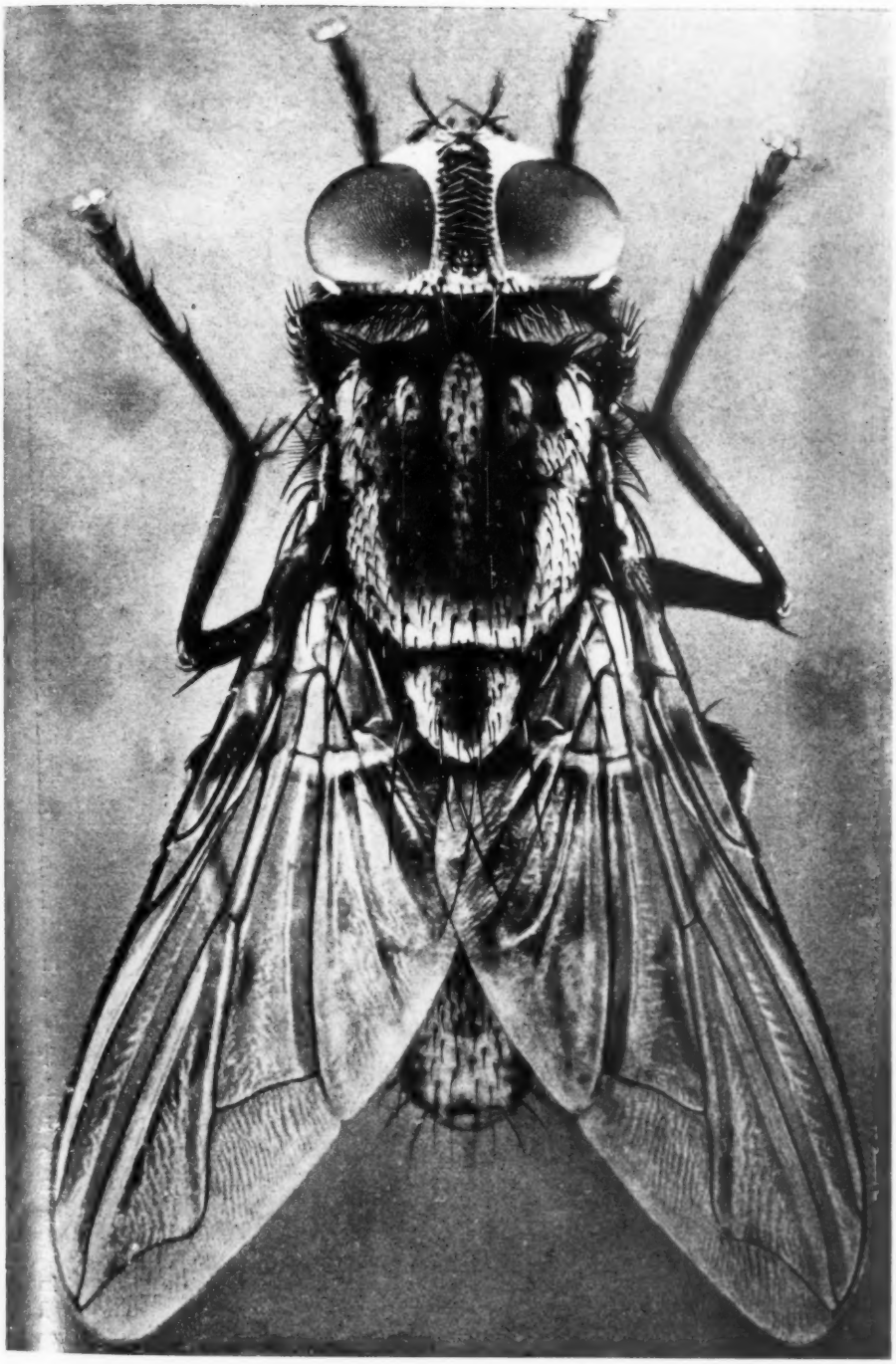
The Typhoid-Fly, as the United States Entomologist has suggested that the common house-fly, *Musca domestica*, be called, is the most abundant insect of this vicinity. It carries the germs of typhoid and many other diseases, especially of those intestinal in character, on the sticky pads of its feet, on its proboscis and in its digestive apparatus. Its eggs are laid in foul matter where the larvæ feed and change to pupæ. Upon emerging from the pupal cases, the flies wing themselves perhaps to other foul places, perhaps to the nearest kitchen or dining-room, to sick-chambers, to the children in the streets, always returning to accumulations of foul matter for the purpose of depositing eggs. It is unnecessary to say more. These facts prove the need of an active campaign, increasing in force with the

return of each summer, especially when combined with the fact that of the 23,087 flies collected by Dr. L. O. Howard from dining-rooms in different parts of the United States, 22,808 were of this typhoid species.

To screen our windows is but a partial remedy against the scourge, for shops from which food comes may remain unscreened. To rid ourselves of the fly we must do away with its breeding places; there is no other way. This means work for the Board of Health in every city, and coöperation of all members of communities everywhere, but it is the one road toward protection from fly-born sickness and death.

The Malaria Mosquito, *Anopheles maculipennis*, is likely to insert the germs of malaria when it pierces the skin, and that it is only the females that "bite," is no consolation since their number is legion. There are 15,000 deaths annually from malarial fevers in the United States, yet this disease can be spread only through the agency of this insect. All mosquitoes, unless it be the striped-legged form of the seashore, should be looked upon with suspicion, for the points of difference between the malarial and non-malarial forms are too minute to be of general help in distinguishing them. The ravages of the malaria mosquito can be checked, just as can those of the typhoid fly, by getting rid of its breeding places. This work also must be communal, the method varying with the conditions. Swamps and pools should be drained whenever possible. Where draining is not practicable, they can be kept free from mosquito larvæ by covering the water with a film of oil. The larvæ coming to the surface to breathe cannot break through the film and so suffocate; however, as the oil evaporates rapidly, it must be renewed every week or two. Ponds, brooks and fountains may be kept relatively free by introducing goldfish or top minnows, if the banks have been cleared of weeds so that the fish can patrol the entire surface. Rain barrels and water tanks should be screened or stocked with fish; even tin cans and bottles which fill with water during rains may prove ruinous to the health of a community and should be buried or disposed of in some safe way. Much work has already been done in eliminating mosquitoes from infested regions, but — and this is the rock on which many mosquito campaigns have been wrecked — the action must be communal and compulsory, one ignorant or obstinate landowner easily making of no avail the work of a hundred.

FRANK E. LUTZ



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THE COMMON HOUSE-FLY OR "TYPHOID-FLY."

House-flies may carry living germs of typhoid fever on the sticky pads of their feet. For structure of Malaria Mosquito, see enlarged model in the Museum, Darwin Hall

ADVENTURE WITH AN AFRICAN ELEPHANT

IT is fortunate indeed that Mr. Carl E. Akeley is recovering from the rather serious injuries received while elephant hunting in Africa this past summer. He came upon a herd unexpectedly and before he could take aim at the giant fellow nearest, the huge tusks were immediately upon him. Mr. Akeley swung himself between the tusks, grasping one with each hand, but was borne to the ground under the elephant's trunk and body. In a letter of July 20 to Director Hermon C. Bumpus, he writes:

> Four weeks ago, while in quest of a spot to make studies for the elephant group, I ran on to the trail of several bulls. The trail was old, but I followed it and came up with the herd the next day quite unexpectedly in dense jungle. One of them saw me first, used me for a "prayer rug" and got off scot-free. I can walk a little now, and have reason to hope that in another month I may be able to return to the forest, though it may be much longer before I can undertake the work of caring for an elephant's skin. I should like to meet once more the elephant who drew first on me.

Mr. Akeley, the noted collector of big African game, has had much previous experience in elephant hunting. He is responsible for the elephants as well as for the taxidermy work in connection with the group in the central foyer of the Field Columbian Museum, a group masterly in its action and in its portrayal of animal character. But the risk in elephant hunting is always great even to the experienced. As Colonel Roosevelt says: "...there are few careers more adventurous, or fraught with more peril, or which make heavier demands upon the daring, the endurance, and the physical hardihood of those who follow them."

Mr. Akeley left New York in the summer of 1908 for British East Africa to make collections for the American Museum, especially to insure an elephant group for the African Hall. His aim has been, therefore, not only to get elephants but also studies and materials for the reproduction of their habitat. It was this that took him to Mount Kenia, the place from which his last letter was sent; on this mountain he reports elephants living at an elevation of 1400 feet. His work of getting possession of the elephants has been slow of achievement because most of the great tuskers have fallen before the continual raids for the ivory trade. Quoting again from his letter:

> Since January, I have inspected well over one thousand elephants here and in Uganda, but have not been fortunate in finding the desired perfect specimens. I am determined that the old bull shall be as near right as possible even if it take another year. Uganda is undoubtedly the place to get big elephants, but they are becoming rare. They are hounded incessantly by sportsmen, poachers, traders and

natives. The wonder is that there is a good one left. One that we shot in Uganda carried tusks of seventy to eighty pounds weight, but owing to the huge bulk of the animal, they appeared small. This elephant was of size sufficient to carry two-hundred-pound tusks gracefully.

Mr. Akeley tells of an interesting discovery he made at Mount Kenia owing to his habit, offensive to his followers, as he says, of "pounding" across country by compass regardless of well-known trails. He found the shelter where a baby elephant had been born and was spending the early days if its existence while the mother fed about in the neighborhood. It was on the extreme point of a ridge, well off the elephant trails and feeding grounds. He was first attracted to the spot by the remarkable appearance of a tree which, hung with an enormous mass of aerial roots, made a canopy for the shelter.

MUSEUM NEWS NOTES

Among the recent gifts to the Museum are the Lender's collection of costumes of the Plains Indians, presented by Mr. J. Pierpont Morgan; a valuable collection of Navajo blankets presented by Mrs. Russell Sage; and two specimens of the African elephant as well as two of the square-mouthed or white rhinoceros, collected and presented by the Honorable Theodore Roosevelt.

A memorial tablet to the late Jonathan Thorne has been placed in the Museum's room for the blind, recently endowed by the bequest of his daughter, the late Phebe Anna Thorne. The tablet is a bronze bas-relief of Mr. Thorne and was designed and executed by Chester Beach of New York.

Since our last issue the following persons have been elected to membership in the Museum: Patrons, Messrs. Ogden Mills and Felix M. Warburg, Her Serene Highness, Princess Vilma Lwoff-Parlaghy and Mmes. Russell Sage and John B. Trevor; Life Members, Messrs. F. Lothrop Ames, C. Forster Cooper and Stanton D. Kirkham and Miss Elizabeth Billings; Sustaining Members, Mr. Charles de Rham and Mrs. C. M. Pratt; Annual Members, Messrs. J. Adams Brown, Clarence L. Fabré, Emil Frenkel, William Hague, Rowland G. Hazard, James Henry, Louis A. Hildebrand, Stanley D. McGraw, S. K. Reed and George M. Thornton and Mmes. Charles A. Post, J. Clifford Richardson and Charles B. Rowland.

PRESIDENT OSBORN left August 5 for a journey in the West, returning to the Museum September 19. He visited the Big Horn Basin of Northern Wyoming, where a field party under Mr. Walter Granger is carrying on explorations for the earliest known ancestors of the horse and of other mammals in America, the especial object of the work being to secure the complete history of the life of this section of the country in lower Eocene times. President Osborn also visited the new Glacial National Park of Northern Montana, which since the last session of Congress has been added to the system of National Parks. This park is a superb region, embracing the wildest and finest mountain scenery in the United States. It contains no less than sixty glaciers and includes the summit of the Rocky Mountain System, lying about forty miles immediately south of the Canadian boundary.

BEFORE his departure for the West, President Osborn sent to the press his volume on the "Age of Mammals." This book is to be published by the Macmillan Company in October and will be the first popular summary of the results of the palæontological explorations of the Museum during the past twenty years. It is illustrated largely from the Hall of Fossil Mammals and from photographs collected by the Museum's field expeditions.

DR. JAMES DOUGLAS is having prepared for the Museum at his expense, a large model of the Copper Queen Mines, the property of the Copper Queen Mining Company, Bixby, Arizona. This model, showing the construction of tunnels and the various processes of extracting and treating the ore, is the first step in Museum representation of the industrial side of geology. Dr. E. O. Hovey has charge of the field studies preparatory to the construction of the model. He left for Arizona early in August, accompanied by Messrs. A. Breismeister, William Peters and Thomas Lunt. They will return to the Museum about the first of October.

DR. CHARLES H. TOWNSEND of the New York Aquarium is serving the Museum as Acting Director during a six-months' leave of absence of Director Hermon C. Bumpus.

PROFESSOR HENRY FAIRFIELD OSBORN has been appointed Honorary Curator of the Department of Vertebrate Palæontology and Dr. W. D. Matthew has been promoted to the position of Acting Curator.

DR. C. H. TOWNSEND has recently presented to the Museum fourteen specimens of Hawaiian Island birds from the collection of the late Edward Hitchcock of Hilo. Not one of the eight species represented was previously contained in the Museum's collection of birds, which is deplorably deficient in Hawaiian material.

A recent addition to the Dinosaur Hall is a skeleton of *Cryptocleidus oxoniensis*, a Plesiosaur from the Oxford Clays of Peterborough, England, dating from the Upper Jurassic. This specimen was obtained by exchange from the British Museum and is unusually complete, the principal restored parts, carefully modelled from other well-preserved skeletons, being the head and the outer ends of the paddles.

Professor C. E. A. Winslow, Curator of the Department of Public Health, delivered a paper, "Waste of Life Capital in American Industries," at the summer conference of Mayors, Schenectady, convened to discuss municipal health problems.

Professor Henry E. Crampton sailed from Naples September 9 after a summer spent in touring through Europe. During his travels he visited the principal European museums, noting methods of exhibition, and studying the collections of terrestrial snails. In August he attended the session of the International Congress at Gratz, reading there a paper covering his investigations on land snails made in four journeys to the islands of the South Pacific.

Since March of the present year, Mr. Roy C. Andrews of the Museum staff has been studying and collecting the Cetaceans taken at the whaling stations on the west coast of Japan. To date he has secured skeletons of whales according to the following list: finback more than 69 feet long, humpback 47 feet long, sperm 60 feet long, sulphurbottom 78 feet long, and two kill whales 22 and 28 feet respectively. In addition, he has procured a number of skeletons of several species of porpoises. These skeletons, four of which have already made the long journey to the Museum, were presented to the Museum by the Oriental Whaling Company of Japan. At the various stations Mr. Andrews has been received with the utmost courtesy by the Japanese and every facility has been extended to him for carrying on the work. A detailed report of his work will appear in a later number of the Journal.

Mr. Alanson Skinner of the Department of Anthropology has made two field excursions this summer. The first was to the Menomini Indians residing on their reservation in northern Wisconsin. From these people, Mr. Skinner obtained an exhaustive collection. He was especially successful in being able to secure some very important religious objects including five medicine bundles. The second expedition was to the Seminole Indians dwelling in the Big Cypress and the Everglades of Florida. On this trip also, a large collection was made, and will shortly be placed on exhibition in the Museum.

MR. ROY W. MINER, Assistant Curator in the Department of Invertebrate Zoölogy, spent the month of July at Woods Hole, Mass., making ecological studies and gathering material for Museum groups to illustrate typical associations of marine life, especially the fascinating fauna of wharf piles. During August, he studied rock tide-pools, first at Nahant, Mass., and later at South Harpswell, Maine. He was assisted in the work by I. Matausch and H. Müller, preparateurs, S. Shimotori, artist, and Thomas Lunt, photographer.

DR. ALEXANDER PETRUNKEVITCH, Honorary Curator of Arachnida, has accepted a position in the Department of Zoölogy at Yale and will assume his new duties at the beginning of the current university year.

MR. J. D. FIGGINS, Chief of the Museum's Department of Preparation, has gone to Denver to assume the Directorship of the Colorado Museum of Natural History.

JUST as the JOURNAL goes to press, a letter dated Cape Parry, Arctic Ocean, March 13, comes from Mr. V. Stefánsson, and one written from Baillie Island from Dr. Rudolph M. Anderson. These letters give the adventures of the Museum's Arctic Expedition and the results of work during the months from September 1, 1909 to March 6, 1910. Unusual difficulties have been experienced in the matter of getting a living from the frozen country. Sometimes the men have been without food for days or have been reduced to forcing down their throats what seems impossible food, such as rubbery, raw sealskin, or ptarmigan feathers and long-haired deerskin soaked in clear seal oil. In fact, at one time starvation reduced them to use as food and sacrifice to the minimum the skins that served them for clothes and bedding. A full report with extracts from their letters will be given later.

AFTER several months spent among the Crow Indians of Montana, Dr. Robert H. Lowie is at present at work among the Hidatsa of the Fort Berthold Reservation, North Dakota.

DRS. GODDARD AND SPINDEN of the Department of Anthropology are attending the Congress of Americanists in Mexico City after which Dr. Spinden will again take up his work among the Rio Grande Pueblo of New Mexico.

THE AMERICAN FISHERIES SOCIETY, which held its fortieth anniversary in New York City, September 27–29, met at the American Museum of Natural History September 28, at which time the members of the Society were the guests of the Museum at luncheon.

Mr. Frank M. Chapman, Curator of Ornithology, addressed the National Conservation Congress at St. Paul, September 7, on "Practical Bird Conservation." Before demonstrating with the aid of lantern slides and motion pictures practical methods and results in the conservation of birds, Mr. Chapman explained why protection is essential and called attention to the relation between birds, insects and forests, giving statistics in regard to the depredations of insects injurious to trees and also data showing to what extent birds feed upon these insects.

LECTURE ANNOUNCEMENTS

MEMBERS' COURSE

The first course of lectures for the season 1910–1911 to Members of the Museum and persons holding complimentary tickets given them by Members will open in November.

PUPILS' COURSE.

The lectures to Public School children will be resumed in October.

PEOPLE'S COURSE.

Given in coöperation with the City Department of Education.

Tuesday evenings at 8:15 o'clock. Doors open at 7:30. The first four of a course of seven lectures by Mr. Arthur Stanley Riggs on "Historic Italy from Sea to Sea." Illustrated by stereopticon views.

October 4.— "Down the Riviera: The French and Italian Shores of the North."
October 11.— "Florence: The City of Art Transcendent."
October 18.— "Pisa — Genoa — Venice: 'They Who Go Down to the Sea in Ships.'"
October 25.— "Rome: The Quick and the Dead — A New View."

Saturday evenings at 8:15 o'clock. Doors open at 7:30. The first four of a course of six lectures on "Evolution" by Professor Samuel C. Schmucker. Lectures of October 15, 22 and 29 illustrated with stereopticon.

October 8.— "Charles Darwin,— a Master Mind."
October 15.— "Natural Selection,— a Master Idea."
October 22.— "Fossil Evidences for Evolution."
October 29.— "What a Chicken Can Teach Us."

Children are not admitted to these lectures, except on presentation of a Museum Member's Card.

MEETINGS OF SOCIETIES

Public meetings of the New York Academy of Sciences and Affiliated Societies will be held at the Museum according to the following schedule:

On Monday evenings, The New York Academy of Sciences:

First Mondays, Section of Geology and Mineralogy;
Second Mondays, Section of Biology;
Third Mondays, Section of Astronomy, Physics and Chemistry;
Fourth Mondays, Section of Anthropology and Psychology.

On Tuesday evenings, as announced:

The Linnæan Society of New York;
The New York Entomological Society;
The Torrey Botanical Club.

On Wednesdays, as announced:

The Horticultural Society of New York;
The New York Mineralogical Club.

On Friday evenings, as announced:

The New York Microscopical Society.

The programmes of the meetings of the respective organizations are published in the weekly *Bulletin* of the New York Academy of Sciences and sent to the members of the several societies. Members of the Museum on making request of the Director will be provided with the *Bulletin* as issued.

The American Museum Journal

MARY CYNTHIA DICKERSON, *Editor.*

FRANK M. CHAPMAN,
LOUIS P. GRATACAP,
WILLIAM K. GREGORY, } *Advisory Board.*

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